



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,512	04/01/2004	George L. Kerber	20-010-DIV	6471

23400 7590 04/13/2006

POSZ LAW GROUP, PLC  
12040 SOUTH LAKES DRIVE  
SUITE 101  
RESTON, VA 20191

EXAMINER

RICHARDS, N DREW

ART UNIT	PAPER NUMBER
----------	--------------

2815

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

61/

<b>Office Action Summary</b>	Application No. 10/814,512	Applicant(s) KERBER, GEORGE L.	
	Examiner N. Drew Richards	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-22, 24-28 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-22 and 24-28 is/are allowed.
- 6) ☒ Claim(s) 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morohashi et al. ("Self-aligned Contact Process for Nb/AlO<sub>x</sub>/Nb Josephson Junctions," Appl. Phys. Lett. 48(3), 20 January 1986, pp 254-256) in view of Lee et al. ("RHEA Process for Fine-Geometry Josephson Junction Fabrication," IEEE Transactions on Magnetics, Vo. 27, No. 2, March 1991, pp 3133-3136). These references were previously cited by applicant in an IDS dated 4/1/04.

With regard to claim 30, Morohashi et al. teach a superconductor integrated circuit in figure 1 comprising:

- a base electrode layer;
- a tunnel barrier layer (Al-AlO<sub>x</sub>) disposed above the base electrode layer;
- a counter electrode layer disposed above the tunnel barrier layer; and
- an anodization ring disposed around a perimeter of the counter electrode layer and a perimeter of the tunnel barrier layer for preventing a short-circuit between an outside contact and the base electrode layer;
- wherein:

- a tunnel junction region is defined by the counter electrode layer, the tunnel barrier layer and the base electrode layer, the tunnel junction region including a junction contact defined by a top surface of the counter electrode; and
- the anodization ring includes an anodized portion of the counter electrode layer, an anodized portion of the tunnel barrier layer and an anodized portion of the base electrode layer (since the sidewalls of the counter electrode and tunnel barrier layer are exposed during the anodization process a portion of these layers is necessarily anodized with the top surface of the base electrode layer).

Morohashi et al. do not teach the junction contact having a diameter of approximately 1.00 micron or less.

Lee et al. teach a superconductor Josephson junction integrated circuit device based upon a Nb counter electrode, an Al-AlO<sub>x</sub> barrier layer, and a Nb base electrode. Lee et al. teach in the introduction paragraph and in page 3135, second column, first paragraph forming the junctions to a diameter of approximately 1.00 micron or less. At the time of the invention it would have been obvious to form the junction contact in the device of Morohashi to a diameter of approximately 1.00 micron or less. The motivation for doing so is to improve circuit integration, reducing junction capacitance, and improving speed/frequency performance. Thus, it would have been obvious to combine Morohashi et al. with Lee et al. to obtain the invention of claim 30.

***Allowable Subject Matter***

3. Claims 18-22 and 24-28 are allowed.

***Response to Arguments***

4. Applicant's arguments filed 2/16/06 with regard to claim 30 have been fully considered but they are not persuasive. Applicant states that new claim 30 corresponds to previous claim 26 rewritten in independent form including the features of original claim 18. However, claim 30 as written does not include the features of claim 26 and thus is rejected over the art of record as explained above.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

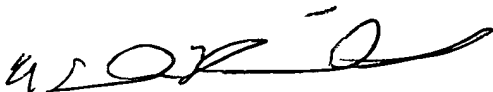
Art Unit: 2815

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



N. Drew Richards  
AU 2815